

DERWENT- 2002-749096  
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DERWENT- 200281  
WEEK:

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TITLE: Method for forming silicon carbon nitride layer on low-k material -  
preventing delamination occurring at the interface between  
silicon carbon nitride layer and low-k layer

INVENTOR: BAU, T; JANG, S ; LI, L

PATENT-ASSIGNEE: TAIWAN SEMICONDUCTOR MFG CO LTD[TASEN]

PRIORITY-DATA: 2001TW-0100649 (January 11, 2001)

**PATENT-FAMILY:**

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
TW 471112 A	January 1, 2002	N/A	000	H01L 021/76

**APPLICATION-DATA:**

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
TW 471112A	N/A	2001TW-0100649	January 11, 2001

INT-CL (IPC): H01L021/76

ABSTRACTED-PUB-NO: TW 471112A

**BASIC-ABSTRACT:**

NOVELTY - The present invention discloses a method for forming silicon  
carbon nitride layer on low dielectric constant (low-k) material which includes

the following steps: (1) forming a first low-k dielectric layer on a semiconductor substrate, (2) forming silicon carbide layer on the first low-k dielectric layer, (3) conducting ion implantation on the silicon carbide layer to convert the silicon carbide layer into the silicon carbon nitride layer, in which the plasma ions comprise nitrogen ions, such as  $\text{NH}_3$  or  $\text{N}_2$ ; in which the material of the first low-k dielectric layer comprises FSG, SiLK, FLARE or nanoglass. The forming method for silicon carbide layer includes obtaining by conducting plasma enhanced chemical vapor deposition (PECVD) in an environment containing  $\text{Si}(\text{CH}_3)_4$  (referred as 4MS in the industry), or  $\text{SiH}(\text{CH}_3)_3$  (referred as 3MS in the industry),  $\text{SiH}_2(\text{CH}_3)_2$  (referred as 2MS in the industry),  $\text{SiH}_3(\text{CH}_3)$  (referred as MS in the industry).

**CHOSEN- Dwg.0/1**  
**DRAWING:**

**TITLE- METHOD FORMING SILICON CARBON NITRIDE LAYER LOW**  
**TERMS: MATERIAL PREVENT DELAMINATE OCCUR INTERFACE**  
**SILICON CARBON NITRIDE LAYER LOW LAYER**

**DERWENT-CLASS: L03 U11**

**CPI-CODES: L04-C01B; L04-C02B; L04-C12B;**

**EPI-CODES: U11-C05B2; U11-C05B5;**

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